1973

Multivariate Prediction of Assaultiveness in a Male Inpatient Psychiatricpopulation.

Michael Levine
Louisiana State University and Agricultural & Mechanical College

MULTIVARIATE PREDICTION OF ASSAULTIVENESS IN A MALE INPATIENT PSYCHIATRIC POPULATION

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

The Department of Psychology

by
Michael Levine
B.A., Temple University, 1966
M.A., Louisiana State University, 1972
August, 1973

ACKNOWLEDGMENTS

I am indebted to many persons who were kind enough to offer their time and effort to assist in the completion of this dissertation. To Dr. Joseph G. Dawson, my committee chairman, I am especially grateful for his extensive guidance, support and friendship. I would also like to thank the other committee members for their patience, support and suggestions, Dr. Donald Glad, Dr. Kenneth Koonce, Dr. Felicia Pryor and Dr. David C. Yang, with a special thanks to Dr. Koonce for his assistance with statistics.

I would like to thank the staff of the Veterans Administration Hospital in New Orleans, Louisiana, for their cooperation, encouragement and support in carrying out this study, with special thanks to Dr. Herdis L. Deabler for his personal interest and assistance in enabling data collection. I would also like to thank the staff of the Veterans Administration Hospital in Gulfport, Mississippi, for their assistance in collection of the cross-validation data, with special thanks to Dr. Patterson and Mrs. White.

I thank Miss Beverly Bruce and Mrs. Mary Mevers for their clerical assistance.

Finally, an extra-special thanks to Oneida for encouragement, support, prodding, cajoling, listening and nagging; and also for assistance in data collection and preparation of the manuscript.

TABLE OF CONTENTS

Chapter Page

LIST OF TABLES

Table Page

LIST OF FIGURES

ABSTRACT

An investigation was made into the feasibility of Discriminant Function Analysis (DFA) as an objective aid in decision-making in a clinical setting. The problem of assaultiveness was selected because of both its seriousness and the primarily subjective way decisions about these patients had been made. A literature review resulted in 14 variables that had been found to discriminate between assaultive Ss (As) and non-assaultive Ss (N-As). All of these were found to be from the Rorschach Test except one, which was Megargee's Overcontrolled Hostility Scale (OHS) from the Minnesota Multiphasic Personality Inventory (MMPI). Possible Ss were obtained on the basis of already available MMPIs and Rorschachs, and presence or absence of previous assaultive behavior was determined by a review of social histories. Ss who had (a) attempted suicide, (b) a diagnosis of possible brain damage, or (c) were only suspected of being assaultive, were eliminated from the study. Assaultiveness was operationally defined as having at least one instance of physical assault which was physically unprovoked. This method resulted in a final sample of 40 Ss -- 29 N-As and 11 As. Data were first analyzed

by analysis of variance to determine which variables significantly discriminated between groups. AS scored significantly higher than N-As on: (a) average Palo Alto Destructive Content Scale score ($p < .05$), (b) proportion of aggressive color responses ($p < .10$), (c) $\frac{\text{Sum C}}{\text{Total Number Color Responses}}$ ($p < .01$), and (d) $\frac{\text{Sum C}}{R_c}$, where R_c equals total number of responses to the color cards ($p < .05$). These variables and several others which approached significant discrimination between groups were run in three sets of discriminant function analyses. Two of these predicted assaultiveness significantly ($p < .01$), the most efficient equations in both sets were the ones composed of four variables. Equation I was composed of the following variables: (a) $\frac{\text{Sum C}}{\text{Total Number Color Responses}}$, (b) number of color minus responses, (c) average Palo Alto Destructive Content Scale Score (PADCS), and (d) proportion of aggressive color with aggressive movement responses. Hit rate for Equation I was 92.5%. Equation II contained: (a) average PADCS score, (b) number color minus responses, (c) $\frac{\text{Number CF Responses}}{\text{Number Color Responses}}$, and (d) $\frac{\text{Sum C}}{R_c}$. Its hit rate was 90%. It was concluded that results supported both Rorschach theory of color responses and the feasibility of prediction of a specific behavior on an individual basis.

Chapter 1

INTRODUCTION

One of the most difficult decisions to be made on an inpatient psychiatric unit is determining when a person on the unit for some type of assaultive or violent behavior is ready to be discharged or allowed on pass (Giovannoni & Gurel, 1967). Many factors enter into this decision, but perhaps the most important ones are: (1) has this person changed so that he will (at least) be less likely to react in the way he has in the past (i.e., violently), and (2) is the environment to which the person will return likely to precipitate violent behavior in him. Although there is some possibility of changing the environment, the bulk of therapeutic changes are limited to the person seeking help.

Presently, evaluation of therapeutic change and readiness of assaultive individuals to return to society are made on the basis of clinical judgment. There are no clear-cut objective criteria for making these decisions. Psychological test data provide a pool of variables which could be employed objectively in aiding this decision-making process. Clinicians often get global impressions from this data and tend not to make specific interpretations

on the basis of specific elements of the test results. It appears likely that clinicians do combine several test variables to arrive at these global impressions, but are often unable to communicate the exact process by which this is done and what weights are assigned to each variable. Thus a need is seen for a technique that can bridge the gap between clinical impressions and specific combinations of test variables which lead to these impressions. Discriminant Function Analysis (DFA) is seen as such a technique.

DFA is a method of combining several variables into an equation which maximizes the discrimination between two or more groups. It results in the assignment of individual subjects (Ss) to one of these groups on the basis of a weighted combination of "scores" on the variables in the equation. It was used in the present study to assign Ss to either an assaultive group or to a non-assaultive group on the basis of a weighted combination of test variables previously found to discriminate between these groups.

One of the goals of psychology is to predict behavior of individuals, although success has been limited (Hunt, 1956). Studies oriented toward discrimination between groups could be viewed as a necessary step along a continuum. Before specific behaviors of individual

organisms can be predicted, the rules, or laws, governing these behaviors must be discovered. One approach to this problem is to look for differences between a group of individuals exhibiting the behavior in question and a group not exhibiting it. Once variables are seen to discriminate between these groups, they could be investigated as to usefulness in predicting specific behavior in a given individual.

In general, the more specific a prediction, the more difficult the task. It is easier to classify individuals in groups, to determine significant differences between groups, and then to generalize about the behavior of this group or class of people, than to predict specific behavior in specific individuals. This study was an attempt to move in the direction of individual prediction of specific behaviors.

Assaultive behavior is certainly related to aggression. While aggression can take many forms, the concern here is with its overt physical expression. According to psychoanalytic theory aggression could be turned outward (against others or society) or inward (against self, in the form of self-mutilation or suicide attempts) or both. This study focused only on aggression against others (assaultive behavior). Also, because of this hypothesized relationship between outwardly and inwardly directed

aggression, patients who had attempted suicide or engaged in self-mutilating behavior were not included in the study. It was believed that this would facilitate prediction by controlling possible interaction effects.

Chapter 2

REVIEW OF THE LITERATURE

While there has been research on correlates of assaultive behavior, most of it has been concerned with demographic variables and much of it has been done on prison populations. Non-demographic variables investigated appeared to be primarily derived from the Minnesota Multiphasic Personality Inventory (MMPI) and the Rorschach Inkblot Test.

MMPI Studies

Megargee, Cook and Mendelsohn (1967) developed an Over-controlled Hostility Scale (O-H-S) containing 31 MMPI items found to differentiate extremely assaultive from moderately assaultive criminals. The O-H-S was the culmination of research beginning with a study published in 1962 (Megargee & Mendelsohn, 1962). The authors intended to determine which of 12 MMPI scales and indices purporting to measure hostility or impulse control was best able to differentiate assaultive from non-assaultive criminals. None of the measures was successful in the predicted direction, and only a few discriminated in the reverse direction (e.g., assaultive Ss scored higher on Inhibition

of Aggression). Replication of this study elicited similar results, and many of the scales tended to assess the assaultive criminals as more controlled. The authors then began to consider assaultiveness as a heterogeneous criterion, after Buss (1961). Buss distinguished between instrumental aggression, where the act is a means toward some end, and angry aggression where the goal is injury of the victim. Individuals with angry aggression could be subdivided into at least two distinct types -- chronically over-controlled (CO) and undercontrolled aggressive (UA). The former (CO) are characterized by excessive inhibition of aggression, while the latter are those with a low threshold for aggression. The CO's inhibitions are so extreme that even the normally socially approved outlets for aggression are denied. Thus frustrations mount to a point where, because of the extreme amount of instigation to aggression, the aggressive act is likely to be of extreme or homicidal intensity. Since the UA's have little inhibition, they aggress whenever provoked and are, therefore, likely to exhibit extremely intense aggression only when provocation is also intense (Megargee, 1965, 1966; Megargee & Mendelsohn, 1962).

Megargee, Cook & Mendelsohn (1967) adopted this theory of assaultive behavior and conducted research that led to development of the O-H-S. They predicted that the

extremely assaultive group would be composed of both CO and UA Ss. The former due to their characteristic mode of handling hostility, and the latter due to intense provocation. They also predicted that the moderately assaultive group would be composed exclusively of UA Ss, as CO Ss would control their hostility to the point where it would be extremely intense when it erupted. These hypotheses and several others based on the same theory were confirmed. Perhaps due to the predicted overlap of populations in the extremely assaultive group, individual prediction was not achieved although a significant discrimination between groups was made. The authors noted this in their discussion, but added that the O-H-S could be valuable as a term in a multiple regression equation. Although Ss for this study were from a prison population and were screened for psychiatric diagnoses, the O-H-S has since been used successfully with a psychiatric population (Blackburn, 1968). It is for these reasons that the O-H-S is included in the present study.

Rorschach Studies

Other measures found to be associated with assaultive behavior were derived from the Rorschach Inkblot Test. Sommer & Sommer (1958) discovered that physically assaultive male psychiatric patients were more likely to have at least one aggressive color response in their

Rorschach record, which was significantly different from those of non-assaultive male psychiatric patients. This difference, however, was not great enough to permit individual prediction of assaultiveness (bi-serial correlation = .35, p .01). The authors further divided their sample (N = 200) into three groups -- aggressive movement (M), non-aggressive M and no M responses. Any responses for which there was doubt as to whether content was aggressive as compared to non-aggressive were dropped from this portion of their statistical analysis. Not enough Ss produced aggressive color responses combined with aggressive movement to use this as a category in comparisons. Ss were, therefore, combined and compared in the following way:

Group 1	Group 2
Aggressive color	Non-aggressive color
Aggressive color with aggressive M	Non-aggressive color with non-aggressive M

Aggressive color and aggressive color with aggressive or no M Ss were compared with non-aggressive color and non-aggressive or no M Ss for their hostility ratings (physical and verbal assaultiveness) by means of a biserial correlation, which improved prediction considerably (r = .55, p .01).

In a review Storment & Finney (1953) found no previous reports of experimental studies dealing directly

with the assessment of overt aggression using the Rorschach Test. They did, however, discover several hypotheses which dealt either directly or indirectly with evaluation of assaultiveness and investigated some of them. Hypotheses they investigated were based on the following reports of previous Rorschach theorists and investigators. Goldfarb (1945), Lindner (1943), Rapaport (1946), Elizur (1949) and Towbin (1959) have suggested that response content that has hostile, destructive connotation is related to aggressive feelings within the individual. Rorschach (1932) observed that both amount of color and extent to which form is used with color are important in assessing affective control. Storment and Finney (1953) stated that Klopfer, in a personal communication to them suggested that people who gave no color responses might be inclined to occasional outbursts of a violent nature. Further hypotheses suggested by Rorschach (1932) were that the ratio of human movement (M) to color responses (Sum C) was valuable in assessing emotional control, and that presence of white space responses (S) was related to negative, oppositional behavior. Klopfer & Kelley (1942) stated that the balance of FM (animal movement responses) and M responses is an indicator of mature control (M) over instinctive drives (FM). A lack of control of aggression could thus be reflected in an excess of FM over M,

especially in connection with a predominance of CF over FC. Finally, Rapaport (1946) has suggested that the presence of responses in which the shape of the blot is incompatible with the shape of the percept (F-), is indicative of the capacity for impulsive unreflective behavior.

On the basis of these reports Storment and Finney (1953) tested the following hypotheses: that the violent group would exceed the non-violent in (1) amount of aggressive content, (2) total amount of color used, (3) number and percentage of CF and FC responses, (4) ratio of Sum C to M, (5) number of individuals showing no color responses, (6) number of individuals with FM greater than M, (7) number of S responses, and (8) percentage of F- responses.

Ss chosen by Storment and Finney were 46 male, hospitalized, neuropsychiatric patients. Twenty-three had exhibited some type of assaultive, violent activity, and a matched group of 23 had no history of overt violent activity. Persons who had only threatened or who were otherwise suspected of being potentially assaultive and suicidal patients were excluded from the study. Ss were administered the Rorschach Test by Dr. Finney which was then scored blind according to Klopfer's system (Klopfer & Kelley, 1942).

Data were analyzed in three different ways, which will be referred to as Parts I, II and III. Part I consisted of comparisons between groups according to Klopfer's scoring method. Either the t technique or the chi-square technique were used depending on the nature of the distribution. Part II consisted of having three clinical psychologists and one psychiatrist experienced in Rorschach work with hospitalized neuropsychiatric patients sort their records into violent and non-violent groups, using any method they chose. Chi-square technique was used to determine significance of agreement of judges with case material and each other. In Part III aggressiveness of content was quantified according to a scoring system developed by Storment and Finney on the basis of other workers' observations and their own experience. If the response also included some description of what the concept was doing (M and FM or m), action was also scored separately. In scoring content, additional responses were given the same weighting as responses given in the free association. For data analysis these scores were grouped in categories of human, animal, plant, anatomy, and object. Content and action for each category were considered separately. Within each content or action category an average aggression score for a given category was obtained. Scores were then combined to get an average

aggression score for each individual. Scores for the violent and non-violent groups were then compared and the differences tested statistically for significance.

Storment and Finney reported results of Part I in three sections -- color, movement, and other scoring categories. With reference to color, groups were compared on (1) number of individuals with an excess of CF over FC, (2) Sum C, (3) number and percentage of color responses, with and without additionals, (4) number of FC responses with good form, (5) number and percentage of responses in which color was used without good form, the FC-, CF, CF-, and C responses, (6) number and percentage of color-minus responses, FC- and CF- responses, and (7) number of individuals who gave no color responses. Only one significant difference was obtained: number and percent of color-minus responses. Significantly more individuals in the violent group gave one or more color responses in which the concept had a definite form which did not correspond to the actual shape of the blot ($p < .02$). Movement comparisons were made in (1) number of cases who gave more FM then M responses, (2) number or percent of M, FM or m responses, (3) percent of all movement responses combined (M + FM + m), and (4) number of cases in which Sum C was larger than M. No significant differences were obtained. No significant differences were found in (1) any other determinants,

combinations, or ratios, (2) percent of minus-form responses, (3) percent of the location categories, (4) percent of any of the usual content classifications, or (5) number or percent of S responses.

In Part II it was found that (1) judges tended to assign more patients to the non-violent group than to the violent group, (2) they were unable to predict the status of patients from an intensive, diagnostic examination of the Rorschach protocol, and (3) only chance agreement was found among the classifications of the judges.

Analysis of data in Part III revealed a highly significant difference between the two groups on average aggression score ($p < .001$). The r_{bis} between aggression scores and the criterion (violent vs. non-violent) was .71. Although there was a tendency for all content categories to show a difference between groups (more aggressive concepts in the violent group), the Animal category was the only one in which the difference was significant ($p < .01$). This could be a result of the much greater frequency of Animal responses as compared to other categories. By means of a statistical technique developed by Gengerelli and reported to the authors in a personal communication, an optimum cut-off point of 3.0 on their 5 point aggression scale was obtained as the point giving the best differentiation in assigning individuals to their correct group.

Average aggression scores of 3.0 or below were assigned to the non-violent group and average aggression scores above 3.0 were assigned to the violent group. This method correctly classified 17 of 23 non-violent patients and 19 of 23 violent patients. Because these average aggression scores included scorings for non-aggressive and neutral responses, and because previous workers had concerned themselves almost exclusively with very aggressive responses, the researchers decided to compare their method with that of other workers. They re-examined these records with regard to only extremely aggressive responses (those scored V on the scale) and found 17 records in the violent group with one or more "V" responses and only 9 in the non-violent group. Use of average aggression score thus correctly diagnosed two more cases in the violent group and three more cases in the non-violent group. Another procedure tried was the use of all aggressive scores ("IV's" and "V's") without considering neutral or passive scores. For each individual, percent of responses with a score of 4 or 5 was calculated, and the median of the distribution of all scores was used as the cut-off point. Nineteen violent cases were above the cut-off and 19 non-violent cases were below it, which proved superior to the average aggression score procedure.

In this study each response was scored by Finney on the basis of his own subjective appraisal of amount of friendly or hostile feeling implicit in the response. Once a response was scored, similar responses were given the same score. Continued use of the scale showed difficulty in categorizing non-hostile responses, especially weak and passive content. In addition, informal rescoring of the original sample by the same author revealed considerable variation, suggesting a lack of intra-scorer reliability. In a later study Finney (1955) attempted to overcome some limitations of the subjective scaling procedure used previously by devising the Palo Alto Destructive Content Scale (see APPENDIX). In this scale content is scored according to specified principles, illustrated by a list of examples. While these principles are rational and a priori rather than empirical, they provide for more objective scoring and increased reliability. According to Finney "they represent speculations as to the most probable standards used by the general public to determine their reactions as to the destructive nature of any given object or animal." Four sub-categories of destructive responses were differentiated. (1) Derogatory Remarks (taken from Elizur, 1949); responses which the S has described in a hostile or derogatory manner. (2) Victim of Destruction; responses in which the percept

(a) has been destroyed, crippled, damaged, injured, or has some essential part missing, (b) is in the process of escaping, warding off, or anticipating injury or harm, (c) anatomy responses in which the skin would have to be cut in order to view the organ, and (d) external sex organs. (3) Possibly Destructive; responses in which the percept is (a) more likely than not to attack, injure, harm, or destroy something, (b) is usually used in some destructive manner, or (c) is considered by the S to be frightening or dangerous. (4) Actively Destructive; responses which include movement (M, FM or m) and in which action is explicitly destructive. The author used the pooled judgment of four clinical psychologists to derive the list of examples. Two additional scoring rules were incorporated: (1) two destructive scores for any single response was made the maximum; and (2) responses where the S vacillated between non-destructive and destructive content were scored as destructive.

Reliability was determined by obtaining the correlation between two judges on percentage of destructive percepts assigned to an individual. Percentages were used rather than numbers to avoid a spuriously high correlation due to differences in number of responses given by each S. The obtained correlation was .83 and the judges agreed on 87% of percepts as to sub-category assigned. Rescoring of

the Storment and Finney sample using the Palo Alto Destructive Content Scale (PADCS) resulted in a significant difference between assaultive and non-assaultive groups, but not as great a difference as originally obtained. Finney believed that, in the long run, the PADCS would prove more valid due to poor reliability of the previous scoring method.

Results of this later study (Finney, 1955) revealed significant differences in the following determinant scores. More assaultive Ss were above the group median in raw CF scores -- 58% as compared with 36% of the non-assaultive Ss ($p < .05$), and more assaultive Ss were above the group median in Sum C -- 59% as compared with 28% ($p < .01$). For the PADCS difference between the group means was nonsignificant ($t = 1.64$) for a one-tailed test in the predicted direction, but was very close. Finney then increased his sample size by including data from the Storment and Finney study. This combined sample resulted in significance beyond the .01 level. When percentage scores on subscales were considered separately, all were in the predicted direction, but only the Possibly Destructive scale showed a significant difference.

Chapter 3

STATEMENT OF THE PROBLEM

The purpose of the present study was threefold: to further validate previous studies to see if variables already found to discriminate between assaultive Ss and non-assaultive Ss would significantly discriminate between the two groups, to determine whether a combination of these variables could be used to facilitate individual predictions, and finally to discover whether four new variables believed valuable would be useful in terms of discrimination between groups or in individual prediction, or both.

More specifically hypotheses tested were as follows. The assaultive group should score significantly higher than the non-assaultive group with respect to:

1. Average score on the PADCS.

2. Proportion of responses in the higher scoring categories of the PADCS.

3. Scores on Megargee's Overcontrolled Hostility Scale.

4. Number of aggressive color responses on the Rorschach.

5. Percent aggressive color responses on the Rorschach.

6. Number of aggressive color responses with aggressive movement.

7. Percent of aggressive color responses with aggressive movement.

8. Number of color minus responses.

9. Percent of color minus responses.

10. Number of CF responses.

11. Percent of CF responses.

12. $\frac{\text{Number CF}}{\text{Number (FC + CF + C)}}$

13. $\frac{\text{Number CF}}{R_c}$, where R_c = number of responses to the color cards (II, III, VIII, IX, X).

14. $\frac{\text{Sum C}}{\text{Number (FC + CF + C)}}$

15. $\frac{\text{Sum C}}{R_c}$

The final hypothesis tested was that a linear combination of these variables should enable individual predictions as to which group a S belongs.

Chapter 4

METHOD

Variables included were those which have been found to significantly discriminate between assaultive and non-assaultive Ss as reported previously, and four related measures developed for this study. Aggressive color responses (both number and percent) and aggressive color responses in which some kind of aggressive movement was involved (both number and percent) were used from Sommer & Sommer. While these researchers did not establish clear cut objective criteria for aggressive color or movement, they gave the following examples: aggressive color -- blood from a wound, volcano, fire; aggressive movement -- fighting, kicking. These examples were used in determining aggressive color and aggressive movement responses in the present study. The Storment & Finney study showed significant differences in both number and percent of color-minus responses (i.e., FC- or CF-). In his later study Finney found significant differences in (1) number of CF responses, (2) Sum C and (3) the PADCS. On the basis of these results the following four variables have been compared:

(1) $\frac{\text{No. CF}}{\text{No. (FC + CF + C) responses}}$

(2) $\frac{\text{No. CF}}{R_c}$

(3) $\frac{\text{Sum C}}{\text{No. (FC + CF + C)}}$

(4) $\frac{\text{Sum C}}{R_c}$, where R_c equals number of responses on the color cards (II, III, VIII-X).

The first new variable $\frac{\text{No. CF}}{\text{No. (FC + CF + C) responses}}$ is believed to give an indication of what proportion of emotionally laden responses are determined to a greater extent by emotional aspects of the stimulus.

The second additional variable $\frac{\text{No. CF}}{R_c}$ should represent what proportion of responses to stimuli with emotional aspects are responded to on the basis of both emotional and cognitive aspects of the stimulus, but more emotionally than cognitively.

The third new variable $\frac{\text{Sum C}}{\text{No. (FC + CF + C)}}$ could be viewed as average emotional reactivity per emotional response.

The last additional variable $\frac{\text{Sum C}}{R_c}$ is seen as average emotional reactivity to stimuli with emotional

aspects. The final variables adopted from previous studies were Megargee's Overcontrolled Hostility Scale from the MMPI and Finney's Palo Alto Destructive Content Scale scoring system for the Rorschach. Both of these were described and discussed previously.

Subjects

Possible Ss were chosen from the male inpatient psychiatric population of the Veterans Administration Hospital in New Orleans, La., on the basis of psychological test data, the criterion being that both a Rorschach Ink Blot Test protocol and a Minnesota Multiphasic Personality Inventory score sheet were available on them. Social history data of possible Ss was reviewed, and Ss were chosen as follows: (1) there was no mention in the social history that it was incomplete or that information may have been unreliable as far as history of psychiatric or legal difficulties, and (2) there had to be at least one reported incident of physically unprovoked assaultive behavior for S to be classified as assaultive. Following Storment & Finney (1953) and Finney (1955) suicidal patients and patients who had only threatened assaultiveness or were just suspected of being assaultive were excluded from the study. Patients with a diagnosis of possible brain damage were also excluded.

Confidentiality of Ss was protected by using numerical identification independent of any numerical identification associated with individual Ss on their medical records. Research complied with specifications of the Station Research Committee of the New Orleans Veterans Administration Hospital, which had approved the project. All care was taken to protect patients' rights and insure confidentiality.

Review of testing files resulted in selection of the following sample: 40 subjects, 29 non-assaultive male psychiatric inpatients and 11 assaultive male psychiatric inpatients.

Data Analyses

Because of the pioneering nature of the study, a less stringent level of significance was accepted for the ANOVA's[1]. The major ways in which this is a pioneering study are outlined below:

(1) Most studies in this area involved only discrimination on a group basis, this one attempted individual prediction.

---

[1] A significance level of .10 was accepted as indicative of some promise as a predictor of assaultiveness.

(2) Most studies of assaultiveness have been done on prison populations, the present study was done on a psychiatric population.

(3) Other studies which attempted individual prediction were univariate and individual prediction attempted was post-hoc, this study attempted individual prediction on a multivariate basis as its primary goal.

(4) Finally, as recently as 1971, Goldfried, Stricker & Weiner stated "no data are available as to the clinical or idiographic application of the Rorschach for the diagnosis of aggressive acting out." Variables involved in this study were primarily Rorschach variables.

Part I, analyses of variance (ANOVA's). Fourteen one-way ANOVA's were run on all variables except the Palo Alto Destructive Content Scale categories to see if variables could significantly discriminate between assaultive Ss and non-assaultive Ss.

A two-way ANOVA was run on the PADCS categories to determine if there was a group by category interaction effect in addition to differences between groups or categories. For this analysis number of responses in each category of the PADCS was converted to a proportion. This was done to enable meaningful comparisons. Because of differences in total number of responses on the Rorschach,

comparing raw scores in the different categories would be difficult to interpret, if not meaningless. In addition, a second two-way ANOVA was run after performing an arc sine transformation on the data to correct for using proportions, assuring that the resulting distribution of mean squares would follow an F-distribution.

Part II, discriminant function analyses (DFA's). The object of this part of the experiment was to use results of Part I to choose one or more sets of ten variables and to combine them in a meaningful way allowing assignment of individuals to one of two groups. Three sets of variables were thus used.[2]

The primary method of data analysis chosen for this part of the study was discriminant function analysis (DFA), although previous studies of this type often employed multiple regression analysis. Like multiple regression analysis, DFA results are summarized in a prediction equation which can be interpreted term by term to develop a theory for predicting target behavior. A

---

[2]Three sets of DFA's were run because sample size limited the number of variables which could be used in a DFA. Since the assaultive group had only 11 Ss, each DFA equation was limited to 10 variables. Thus three sets of DFA's were run so that all possibly significant contributors could be included in at least one equation.

difficulty found with multiple regression is that while it indicates how similar S's scores are to those exhibiting target behavior, it does not indicate whether he is more likely than not to exhibit this behavior. One would need at least two multiple regression equations to accomplish this purpose: an equation predicting behavior A and another predicting absence of behavior A. There are flaws in this method also. Since variables involved in the two equations could be entirely different it would be possible for an S to score exactly the same on both equations. Discriminant function analysis results in one equation utilizing variables that not only predict presence of behavior A, but also absence of it. This is achieved by means of a cut-off point above which S is more likely to exhibit behavior A and below which he is more likely not to. Although DFA was used here for a dichotomous variable (assaultive behavior as opposed to non-assaultive behavior) it has been expanded for use with multiple classifications. This appears to be a promising method of prediction because it not only tells which variables are related to the presence of a specific behavior, but which variables are related to its presence or absence. (Fisher, 1936; Garrett, 1943; Mather, 1951; Tiedeman, Rulon & Bryan, 1951).

select equations that used the fewest number of independent variables while still resulting in an acceptable hit-miss rate.

Finally, to aid in determining whether the results obtained were valid outside of the original sample, a small cross validation sample was obtained from a comparable population at the Veterans Administration Hospital in Gulfport, Mississippi. It consisted of 14 Ss, 6 As and 8 N-As. The best equations obtained were then run on this sample to ascertain their predictive value.

In order to make results more meaningful each of three sets of variables was run on two programs. The first was a stepwise discriminant analysis which ranked variables as they entered the discriminant function according to the size of each variable's independent contribution to prediction. The second program was for discriminant analysis involving two groups, and generated the actual discriminant function equations. By using results of the first program as the input for the second, thirty discriminant functions were obtained as follows: For each of the three sets of variables a discriminant function equation was obtained, the first for the one variable that was the best predictor of the criterion. Then each of the remaining nine variables was added one at a time according to that one found to be the next best predictor and a new discriminant function was computed after each new variable was added.

The following technique was then used to determine the equation which was the most efficient predictor of assaultive behavior. First, equations were tested for significance using F tests generated by the program. Those that significantly discriminated between assaultive Ss (As) and non-assaultive Ss (N-As) were then compared on hit-miss rate to further refine prediction. These two criteria (F test and hit-miss rate) were combined to

Chapter 5

RESULTS

Part I

Four of 14 ANOVA's were significant at or beyond the .10 level, and results are presented in Tables 1 through 4. Results were as follows: assaultive Ss scored significantly higher than non-assaultive Ss on (1) average score of the PADCS, (2) proportion of aggressive color responses, (3) $\frac{\text{Sum C}}{\text{No. (FC + CF + C)}}$, and (4) $\frac{\text{Sum C}}{R_c}$. In addition one other variable approached significance. This was $\frac{\text{No. CF}}{\text{No. (FC + CF + C)}}$, which was significant beyond the .1575 level. Results of this ANOVA are shown in Table 5. Again assaultive Ss scored higher than non-assaultive Ss. Tables 6 through 14 show the ANOVA's for remaining variables, and Table 15 shows means for the two groups on all variables. Results of the two-way ANOVA are shown in Table 16.

Since there was no appreciable difference in results when the arc sine transformation was applied, results reported are those obtained on untransformed proportional data. There was no significant difference

Table 1[3]

Analysis of Variance on Average Palo Alto Destructive Content Scale Scores between Criterion Groups

Source	df	MS	F
Group	1	2.432	5.905**
Residual	38	.412	

**p .05

[3]All figures on all tables have been rounded to three decimal places, therefore, the F values given may not agree with those calculated from the mean squares given in the tables.

Table 2

Analysis of Variance on Proportion of Aggressive Color Responses between Criterion Groups

Source	df	MS	F
Group	1	.006	2.798*
Residual	38	.002	

*p .10

Table 3

Analysis of Variance on Sum C / Total Number of Color Responses between Criterion Groups

Source	df	MS	F
Group	1	1.060	7.466***
Residual	38	.142	

***p .01

Table 4

Analysis of Variance on Sum C / Total Number of Responses to the Color Cards between Criterion Groups

Source	df	MS	F
Group	1	.135	4.219**
Residual	38	.032	

**p .05

Table 5

Analysis of Variance on $\frac{\text{Number of CF Responses}}{\text{Total Number of Color Responses}}$ between Criterion Groups

Source	df	MS	F
Group	1	.256	2.045
Residual	38	.125	

Table 6

Analysis of Variance on Overcontrolled Hostility Scale between Criterion Groups

Source	df	MS	F
Group	1	52.953	0.351
Residual	38	150.762	

Table 7

Analysis of Variance on Number of Aggressive Color Responses between Criterion Groups

Source	df	MS	F
Group	1	1.018	.623
Residual	38	1.634	

Table 8

Analysis of Variance on Number of Aggressive Color with Aggressive Movement Responses between Criterion Groups

Source	df	MS	F
Group	1	.292	1.037
Residual	38	.281	

Table 9

Analysis of Variance on Proportion of Aggressive Color with Aggressive Movement Responses between Criterion Groups

Source	df	MS	F
Group	1	.001	1.380
Residual	38	.001	

Table 10

Analysis of Variance on Number of Color Minus Responses between Criterion Groups

Source	df	MS	F
Group	1	1.110	1.032
Residual	38	1.075	

Table 11

Analysis of Variance on Proportion of Color Minus Responses between Criterion Groups

Source	df	MS	F
Group	1	.000[4]	.167
Residual	38	.002	

[4]MS is rounded off to three decimal places and is not equal to zero.

Table 12

Analysis of Variance on Number of CF Responses between Criterion Groups

Source	df	MS	F
Group	1	.004	.002
Residual	38	2.126	

Table 13

Analysis of Variance on Proportion of CF Responses between Criterion Groups

Source	df	MS	F
Group	1	.003	.687
Residual	38	.004	

Table 14

Analysis of Variance on $\frac{\text{Number of CF Responses}}{\text{Total Number of Responses to the Color Cards}}$ between Criterion Groups

Source	df	MS	F
Group	1	.012	.740
Residual	38	.016	

Table 15

Means on All Variables by Group

Group	Variables						
	Ave. PADCS	OHS	No. Agg. C Responses	Prop. Agg. C Responses	No. Agg. C with Agg. M Responses	Prop. Agg. C with Agg. M Responses	No. Color Minus Responses
Assaultive	2.360	59.818	0.909	0.050	0.364	.022	.455
Non-Assaultive	1.808	57.241	0.552	0.022	0.172	.009	.828

Group	Variables (continued)						
	Prop. Color Minus Responses	No. CF Responses	Prop. CF Responses	No. CF / Total No. C Responses	No. CF / R_c	Sum C / Total C Responses	Sum C / R_c
Assaultive	.026	1.091	.065	.439	.125	.871	.281
Non-Assaultive	.032	1.069	.046	.260	.086	.507	.151

Table 16

Analysis of Variance on Palo Alto Destructive Content Scale Categories between Criterion Groups and Across Categories

Source	df	MS	F
Group	1	.000[5]	.000[5]
Individuals within Groups	38	.000[5]	.000[5]
Category	4	1.899	112.065****
Group x Category	4	.061	3.627***
Error	152	.017	

****p .001

***p .01

[5]These figures were rounded to three decimal places and are not equal to zero.

between groups or among individuals within groups. There were, however, significant differences (both beyond the .01 level) among categories and a significant group by categories interaction effect. When these results are presented graphically it becomes clear where the differences lie (Figures 1 and 2).

The categories effect is due largely to the high proportion of responses in Category I (Non-destructive), regardless of group. The interaction effect appears to be due to the crossing of the curves representing the two groups: N-As scoring higher on Category I and As scoring higher on Category IV (Possibly Destructive) and Category V (Actively Destructive).

Part II

Variables for discriminant function analyses were chosen on the basis of results from Part I. Each of three sets of ten variables included all of those found to discriminate significantly between groups. In addition other variables were added on the basis of their nearness to being able to significantly discriminate assaultive Ss from non-assaultive Ss to bring the total number of variables up to ten, allowing for maximum discrimination.

The three sets of variables run are presented in Table 17. Sets I and II were found to be statistically significant.

Figure 1. Proportions of PADCS Categories

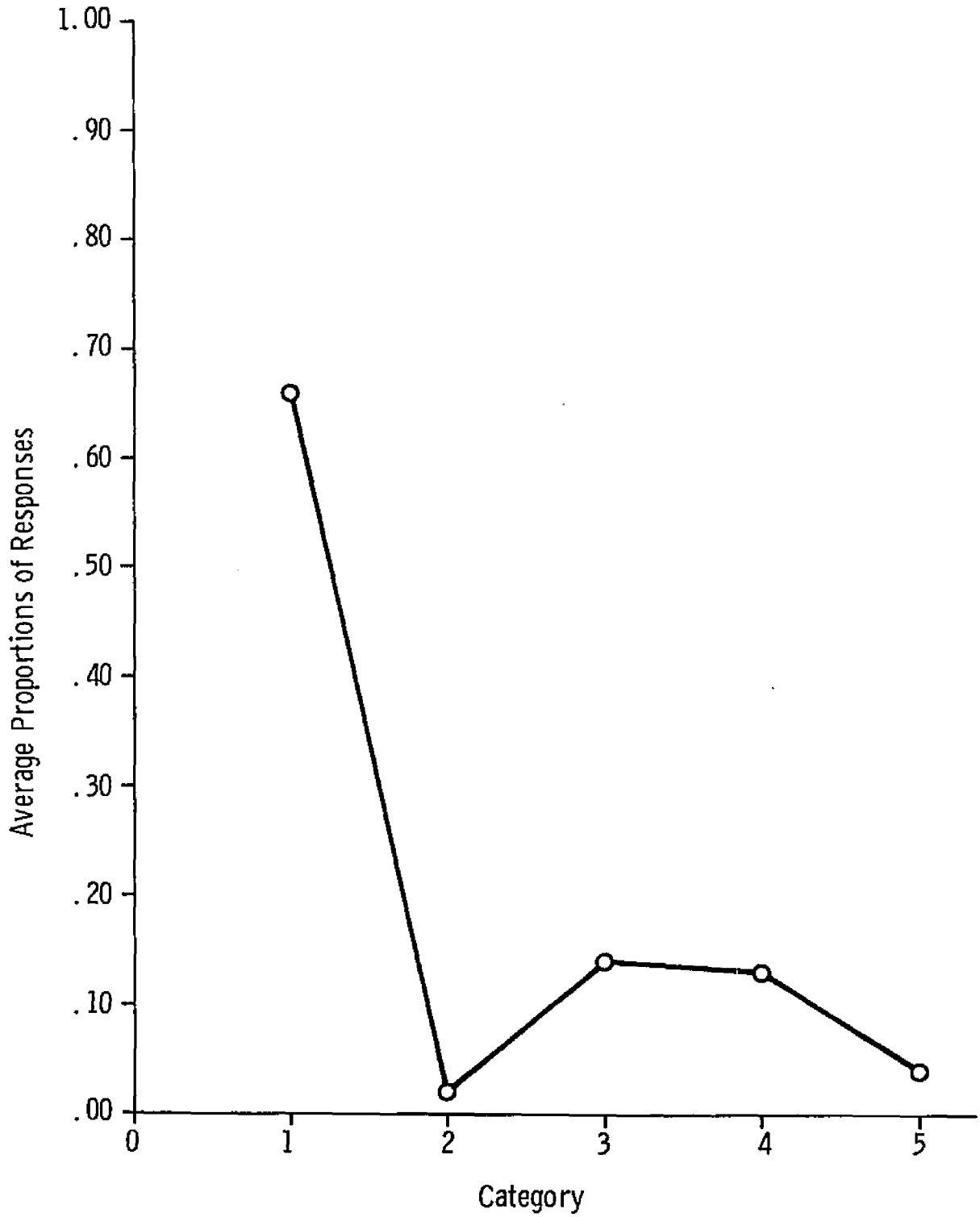

Figure 2. Proportions of PADCS Categories by Group

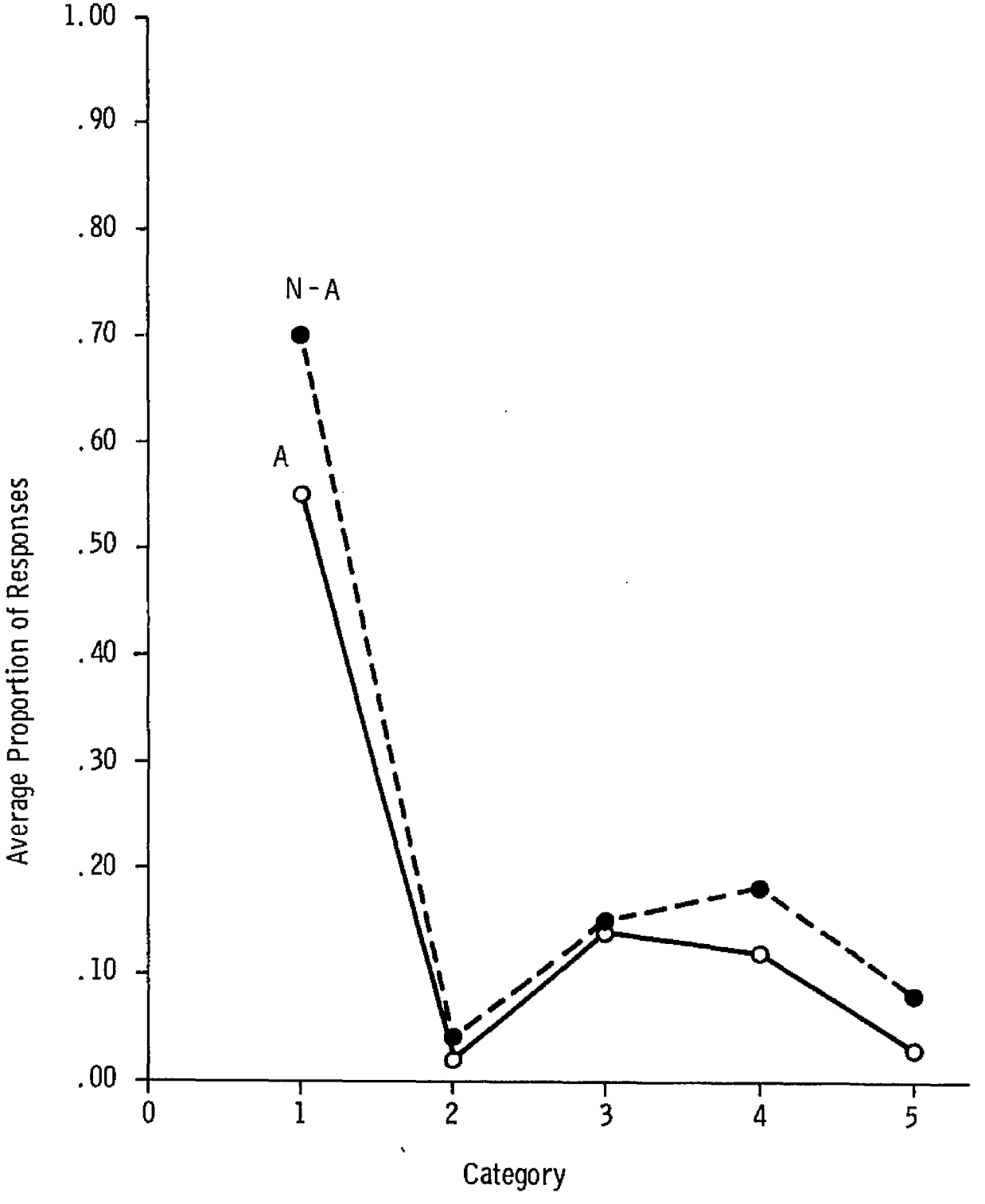

Table 17

Sets of Variables for Discriminant Function Analyses

Set I	Set II	Set III
Average PADCS	Average PADCS	Average PADCS
Proportion of Responses in PADCS Category I	Proportion of Responses in PADCS Category I	Proportion of Responses in PADCS Category I
Proportion of Aggressive C Responses	Proportion of Responses in PADCS Category IV	Proportion of Responses in PADCS Category III
Proportion of Aggressive C with Aggressive M Responses	Proportion of Responses in PADCS Category V	Proportion of Aggressive C Responses
Number of C Minus Responses	Proportion of Aggressive C Responses	Proportion of Aggressive C with Aggressive M Responses
Proportion of CF Responses	Proportion of Aggressive C with Aggressive M Responses	Proportion of CF Responses
$\frac{\text{No. CF Responses}}{\text{No. (FC + CF + C) Responses}}$	No. of Minus Responses	$\frac{\text{No. CF Responses}}{\text{No. (FC + CF + C) Responses}}$

Table 17 (continued)

Set I	Set II	Set III
$\frac{\text{No. CF Responses}}{R_c}$	Proportion of CF Responses	$\frac{\text{No. CF Responses}}{R_c}$
$\frac{\text{Sum C}}{\text{No. (FC + CF + C) Responses}}$	$\frac{\text{No. CF Responses}}{\text{No. (FC + CF + C) Responses}}$	$\frac{\text{Sum C}}{R_c}$
$\frac{\text{Sum C}}{R_c}$	$\frac{\text{Sum C}}{R_c}$	Proportion of Responses in PADCS Categories IV and V

For Set I, the most efficient equation, both in terms of F test and hit-miss rate, was as follows:

$$Y = .10764\ V_1 - .04181\ V_2 + .06759\ V_3 - .53309\ V_4,$$

where $V_1 = \frac{\text{Sum C}}{\text{No. (FC + CF + C)}}$, V_2 = Number of color minus responses, V_3 = Average PADCS, and V_4 = Proportion of aggressive color with aggressive movement. This equation predicted assaultiveness significantly ($F = 5.937$, p .01) with an excellent hit-miss rate. After selecting the best cut-off point[6] this equation correctly classified 10 out of 11 assaultive Ss and 27 out of 29 non-assaultive Ss for a hit rate of 92.5%. No other equation in this set equalled this hit rate, and the next one (which correctly classified 10 out of 11 As and 26 out of 29 N-As) required twice as many variables.

In Set II the best equation was also one involving four variables ($F = 4.442$, p .01). It correctly classified 9 of 11 As and 27 of 29 N-As for a hit rate of 90%. This equation was as follows:

$$Y = .05488\ V_1 - .03612\ V_2 + .06154\ V_3 + .06795\ V_4,$$

where V_1 = Average PADCS, V_2 = Number of color minus

---

[6] One of the difficulties with the DFA technique is selection of an appropriate cut-off point. Ideally, the base-rate of the experimental population should determine this point. Because this datum was not available, the point which maximized separation of groups was selected as the cut-off.

responses, $V_3 = \frac{\text{No. CF}}{\text{No. (FC + CF + C)}}$, and $V_4 = \frac{\text{Sum C.}}{R_c}$. Once again the next best predictor required eight variables and was not as efficient ($F = 2.980$, p .05). Hit rate was the same (10 of 11 As and 26 of 29 N-As for a 90% hit rate).

As can be expected this hit rate did not hold up for cross-validation data, but some predictive utility was retained. The four variable equation from Set I correctly classified three of six As and seven of eight N-As for a hit rate of 71%. The two equations chosen from Set II also had a hit rate of 71%. The four variable equation from this set had identical results to that of Set I. The eight variable equation correctly classified four of six As and six of eight N-As for its 71% hit rate.

Chapter 6

DISCUSSION

Results of this study are relevant not only to the issue of prediction of assaultive behavior in male psychiatric inpatients but have direct bearing on at least two other major issues -- the issue of group as compared to individual prediction, and that of objective clinical use of the Rorschach Test. Two successful prediction equations were generated using only six variables which previously had been found to discriminate on a group basis. This supported the contention that it is possible to move from group to individual prediction with this method.

The other major issue to which this study is relevant is that of a global, gestalt-type approach to Rorschach Test use as compared to a discreet use of specific variables. Much Rorschach research has been criticized because it focused on only part of the test and was, therefore, not comparable to the method used by clinicians. On the other hand, clinicians' global and often subjective use of the test makes meaningful research difficult. DFA appears to be a valuable tool in the resolution of this conflict, as it seems to bridge the two opposing views. It

can take specific variables and combine them into a gestalt with respect to a given criterion. Literally, this is done by making each variable a term in an equation which predicts a behavioral gestalt. It is then the task of the researcher to interpret the meaning of the relationship established in the equation. This is essentially similar to the clinician's use of the Rorschach Test, except that DFA has already shown an objective relationship to exist.

Part I

Significant results of this part of the experiment were all in the predicted direction. Of fourteen one-way ANOVA's, four were significant at or beyond the .10 level. This is more than expected by chance. Results suggested that assaultive psychiatric patients (1) see more overtly aggressive percepts on the Rorschach, (2) see more aggression in their percepts involving an emotional component, (3) have a higher emotional reactivity per emotional response, (4) have higher emotional reactivity to stimuli with emotional aspects, and (5) tend to have a greater proportion of their emotionally laden responses more determined by emotional than cognitive aspects of the stimulus.

If the Rorschach Test is viewed as a relatively unstructured (or potentially multi-structured) situation, assaultive psychiatric patients could be described

behaviorally in the following manner: (1) They are more likely to perceive a given situation as aggressive in nature (and therefore threatening). This would reflect their higher average score on the PADCS. (2) This tendency is even more pronounced when emotions are brought into play and is reflected by a greater proportion of aggressive color responses. (3) When assaultive patients respond emotionally, their response is more intense than that of non-assaultive patients as indicated in the definition of $\frac{\text{Sum C}}{\text{Total No. of color responses}}$. (4) They are more likely to respond emotionally in situations with emotional aspects. That is, they have poorer impulse control. This follows from the definition of $\frac{\text{Sum C}}{R_c}$. (5) When their response involves emotion it is more emotional than cognitive a greater proportion of the time than N-As' responses as reflected in the definition of $\frac{\text{No. CF}}{\text{No. (FC + CF + C)}}$. These interpretations, of course, rely heavily on Rorschach theory of the meaning of color responses, and are valid only insofar as the theory itself is valid. However, construct validity of the behavioral interpretations, and the consistent and meaningful way they fit together add credence to the final result.

Results of the two-way ANOVA are consistent with above findings. It is difficult to determine exactly where significant differences lie but the trend is clearly indicated. Proportionately more of N-As' responses were in Category I (Non-destructive) than were As', although both were high. Similarly, proportionately more of As' responses were in Categories IV (Potentially Destructive) and V (Actively Destructive), although both were low. The difficulty is in telling whether the difference in the average PADCS score was because As saw more destructive content or because N-As saw more non-destructive content or some combination of both.

Although only four of fourteen variables were able to significantly discriminate between groups, a comparison of means reveals that in only two cases was the difference in means in the opposite direction than that predicted. Both number and proportion of color minus responses were greater in N-As than in As. This is attributed to both the small sample size involved (only 11 As), and to the rarity of color responses in general. These variables definitely merit further examination, in that number of color minus responses did add significantly to predictive power of both equations.

Part II

The equations finally obtained are extremely encouraging. There appears to be great potential for both theoretical and practical investigation of violence. Results do not support viewing assaultive Ss as chronically over-controlled in Megargee's sense of the term. Their scores on the O-H-S were within the average range, and predictor variables were indicative of a lower threshold for emotional reactivity and poorer impulse control rather than rigid overcontrol, which was also supported by social history data. Most, if not all, of assaultive Ss, had several instances of assaultive behavior.

In interpreting results of Part II it was found more meaningful to compare positive contributors (those which had a positive coefficient in either equation) to negative contributors (those which had a negative coefficient in either equation) rather than to deal with each equation separately, because variables that were in one equation and not the other were so assigned due to statistical limitations imposed by the small number of assaultives rather than on any theoretical or conceptual basis.

The largest positive contributor to prediction of assaultiveness was $\frac{\text{Sum C}}{\text{No. (FC + CF + C)}}$. If Sum C is seen as an indicator of total emotional reactivity, then dividing

it by the total number of responses involving an emotional reaction would give an indication of average emotional reactivity per emotional response. In other words, when assaultive Ss react emotionally their reactions are more intense than non-assaultive Ss.

The second largest contributor to prediction was average score on the PADCS. The more overtly destructive content one sees on the Rorschach, the more likely one is to be assaultive. Assuming that the S is projecting destructive content onto the blots, this is interpreted to mean that assaultive patients are more likely to perceive a given situation as destructive or possibly destructive in nature and are therefore more likely to react to this threat.

A third positive contributor was the ratio $\frac{\text{No. CF}}{\text{No. (FC + CF + C)}}$, which appears to measure impulse control. This is true if the controlling factor of impulse control is viewed as an intellectual control. CF responses are more emotionally than intellectually determined, so dividing the number of these by the total number of color responses would give the proportion of responses involving some emotion that are more emotionally than cognitively determined. It appears, therefore that As respond more emotionally than cognitively more often than N-As when an emotional response is involved.

The last positive contributor was the ratio $\frac{\text{Sum C}}{R_c}$, where R_c is the total number of responses to the color cards. This was defined as average emotional reactivity to stimuli with emotional aspects. It gives an indication of how likely one is to react emotionally in emotion-eliciting situations. Assaultive Ss are more likely to react emotionally in these situations.

These four interpretations present a fairly clear theoretical picture of the male assaultive psychiatric patient. He is the type of person more prone than other male psychiatric patients to perceive a situation as potentially or actively destructive. After perceiving a situation as threatening, he is more likely to react emotionally. When his reaction involves emotion his response is more likely to be determined by emotions as opposed to the cognitive or rational aspects of the situation. And finally, when he reacts emotionally, his reactions are more intense.

Only two variables contributed negatively to prediction: number of color minus responses and proportion of aggressive color responses with aggressive movement. If color minus responses are viewed as indicative of distortion of reality or of ignoring reality when some emotional reaction is involved then data indicate that assaultive Ss are less likely to do this. If this type of response is

further seen as indicative of more severe or serious psychiatric disturbance (e.g., psychosis), then it might be inferred that assaultive Ss are less likely to be psychotic than non-assaultive Ss. Psychosis could then be viewed as a "healthy" defense (in the sense that it is healthy to avoid assaulting others). Color minus responses could be interpreted as a means of avoiding acting on one's emotions by distorting reality so that there is no need to. Another interpretation could be that psychosis is in part a defense against hostile impulses, an interpretation consistent with psychoanalytic theory of catatonia (Fenichel, 1945).

Proportion of aggressive color responses with aggressive movement is more difficult to interpret, because although it was a negative contributor, assaultive Ss had a higher score on this variable than non-assaultive Ss. Perhaps the most likely explanation for this finding is that it is an artifact of the study. Incidence of this type of response was very low. Twenty-five of forty Ss had none of these responses. If there is, however, a valid effect, it could be interpreted as follows. Assuming that aggressive color with aggressive movement responses represent a working through in fantasy (the M) of aggressive impulses, and assuming also that previous interpretations of positively contributing variables have some validity, then this could

mean that assaultive Ss do not work through enough of their aggressive impulses through fantasy to prevent their acting on some.

Results of this study do appear to relate to a previous failure to predict aggressive behavior in an experimental hostility-evoking situation. Gluck (1955) used 30 psychiatric patients in an Army psychiatric hospital and tried to predict hostile behavior using Elizur's system, which is similar to that developed by Finney. Gluck speculated that the failure of his study might be due to the fact that he had no measure of impulse control. The positive results of the present study are interpreted to lend support to this hypothesized need for a measure of impulse control.

Suggestions for Further Research

In interpreting results of this study hypotheses have been stated with minimal reservations. It must be kept in mind that this is the initial research of this type and has many limitations. While it is not statistically probable that results are primarily artifactual, some of them may be. Sample size, particularly for the assaultive group (N = 11), was unusually small. The population was limited to male psychiatric inpatients and no attempts were made to control relevant variables (such as diagnosis,

age, length of stay in the hospital, etc.) due to difficulties involved in obtaining an adequate sample. The "prediction" of assaultiveness was actually "postdiction" and these variables may prove useless for practical decision-making. It is believed, however, that these results are a useful starting point for further research. Studies are needed with larger samples and with true attempts at prediction. The consistent 71% hit rate on the small cross-validation data indicates possible usefulness. Further studies should elucidate these findings.

REFERENCES

Blackburn, R. Personality in relation to extreme aggression in psychiatric offenders. British Journal of Psychiatry, 1968, 114 (512), 821-828.

Buss, A. H. The psychology of aggression. New York: Wiley, 1961.

Elizur, A. Content analysis of the Rorschach with regard to anxiety and hostility. Rorschach Research Exchange, 1949, 13, 247-284.

Fenichel, O. The Psychoanalytic Theory of Neurosis. New York: W. W. Norton & Company, Inc., 1945.

Finney, B. C. Rorschach test correlates of assaultive behavior. Journal of Projective Techniques, 1955, 19, 6-16.

Fisher, R. A. The use of multiple measurements in taxonomic problems. Annals of Eugenics, 1936, VII, 179-188.

Garrett, Henry E. The discriminant function and its use in psychology. Psychometrika, June, 1943, 8(2), 65-79.

Giovannoni, Jeanne M. & Gurel, Lee. Socially disruptive behavior of ex-mental patients. Archives of General Psychiatry, 1967, 17(2), 146-153.

Gluck, M. R. Rorschach content and hostile behavior. Journal of Consulting Psychology, 1955, 19, 475-478.

Goldfarb, W. The animal symbol in the Rorschach test, and an animal association test. Rorschach Research Exchange, 1945, 9, 8-15.

Goldfried, M. R., Stricker, G., & Weiner, I. B. Rorschach Handbook of Clinical and Research Applications, 1971, Chapter 4. Elizur's Hostility Scoring, P. 101, Englewood Clifts, N. J.: Prentice-Hall, Inc.

Hunt, W. A. The clinical psychologist. Springfield, Ill.: Charles C. Thomas, 1956.

Klopfer, B. & Kelley, D. M. The Rorschach technique. New York: World Book, 1942.

Lindner, R. M. Some significant Rorschach responses. Journal of Clinical Psychopathology, 1943, 5, 69-93.

Mather, K. Statistical analysis in biology. London: Methuen, 1951.

Megargee, E. I. Assault with intent to kill. Trans-Action, 1965, 2(6), 27-31.

Megargee, E. I. Under-controlled and over-controlled personality types in extreme antisocial aggression. Psychological Monographs, 80, Whole No. 611, 1966.

Megargee, E. I., Cook, P. E., and Mendelsohn, G. A. Development and validation of an MMPI scale of assaultiveness in over-controlled individuals. Journal of Abnormal Psychology, 1967, 72(6), 519-528.

Megargee, E. I., & Mendelsohn, G. A. A cross-validation of twelve MMPI indices of hostility and control. Journal of Abnormal and Social Psychology, 1962, 65(6), 431-438.

Rapaport, D. Diagnostic psychological testing. Vol. II. Chicago: Year Book Publishers, 1946.

Rorschach, H. Psychodiagnostik, 2nd edition. Bern: Huber, 1932.

Sommer, R. & Sommer, D. T. Assaultiveness and two types of Rorschach color responses. Journal of Consulting Psychology, 1958, 22, 57-62.

Storment, C. T. & Finney, B. C. Projection and Behavior: A Rorschach study of assaultive mental hospital patients. Journal of Projective Techniques, 1953, 17, 349-360.

Tiedeman, D. V., Rulon, P. J., and Bryan, J. G. The multiple discriminant function -- A symposium. Harvard Educational Review, XXI.

Towbin, A. P. Hostility in Rorschach content and overt aggressive behavior. Journal of Abnormal and Social Psychology, 1959 (May), 58, 312-316.

APPENDIX

INSTRUCTIONS FOR THE USE OF THE PALO ALTO DESTRUCTIVE CONTENT SCALE

This is a procedure for rating the presence and type of destructive activity, implicit or explicit, in an individual Rorschach response. The content is to be scored according to the general rules explained below. Illustrative examples are given to clarify and anchor the ratings. Each response is to be examined to determine whether it has the characteristics of any of the four aggressive categories, and if it qualifies for a category it is to be scored in that category. If a single response qualified for more than one category, it can be given scores in two categories. Those responses which have characteristics of more than two categories will be scored in the two categories with the largest designating numbers.

1. "Non-destructive" Responses.

This classification includes all responses in which it is more likely than not that the concept (A) will not attack, injure, destroy, or damage some other thing, or (B) is not typically used for destructive activities, or (C) has not been or is not being destroyed, injured, or crippled, or (D) is not considered by the subject as

dangerous or frightening. Furthermore, the concept must not have been described in a derogatory manner.

2. Derogatory Remarks.

This classification includes all responses which have been described or referred to in a derogatory, contemptuous, or hostile manner. The criteria for determining whether a response is derogatory or not is whether an ordinary individual would become angry and judge that the speaker was being hostile if such a remark was made about him. In addition to describing the concept with some undesirable characteristics, there must be evidence of a critical, derogatory attitude on the part of the subject. Thus the response "a very fat man" would not be a derogatory remark, even though it can be construed to be descriptive of an undesirable characteristic, but the response "a fat slob of a man" would be a derogatory remark because of the implied criticism of the fat person.

3. "Victim of Destruction" Responses.

This classification includes responses in which the concept (A) has been destroyed, crippled, damaged, injured, or has some essential part missing, such as "a dead bird," "a hunchback," "a torn skin," "bears with their heads cut off," or "a dog with his tail gone," or (B) is in the process of escaping, warding off, or anticipating injury or harm, "a rabbit running away," "a man holding up his arms

to protect himself," or "a turtle -- he pulls his neck in when there is any danger."

There must be some animal agent or victim involved in the concept; animals or humans damaged by inanimate natural processes, such as "a rotten skin," "a sunburned face," "a man sick with some disease," are included as are plants and objects which have been damaged by some animal agent, such as "a rock that has been chipped away by a hammer," "a board with a bullet hole in it," "a leaf that has been eaten away," or "a tree that has been chopped down," but concepts in which the process and object are both inanimate, such as "a burnt stump," "a weatherbeaten old rock," or "a rusted piece of iron" are excluded. Animal skins are not scored in this category unless there is some explicit recognition that killing or skinning is involved in obtaining an animal skin. However, damage to the skin is scored.

Certain anatomy concepts are included in this category. These include: (1) Tissue anatomy, which can be viewed only by breaking the skin, such as "heart," "liver," "blood," or "lungs," (2) Sexual and eliminative organs, such as "penis," "anus," "menstrual blood," "breast" or "vagina" or (3) Bone anatomy where some destructive activity is strongly implied, as "skeleton" or "skull." These responses which are not primarily sexual, but in

which the subject comments upon the sexual organs are to be scored in this category if such a comment would be considered inappropriate or insulting in a formal situation. The response "pelvis" is not included in this category, and anatomical charts, drawings, or x-rays are excluded unless the tone of the response indicates that the subject is actually visualizing the real organs.

4. "Possibly Destructive" Responses.

This category includes all responses in which the concept is (A) more likely than not to attack, injure, harm, or destroy something, or (B) is usually used in some destructive activity, or (C) is considered by the subject to be dangerous or frightening. Humans in this class are those who are malevolent, as "devils," "witches," "ghosts," "criminals" or "fiends": or warlike and pugnacious, such as "warriors," "savages," "pugilists," or "cavemen." Animals in this class are those which are predatory and carniverous, such as "wolves," "tigers," "weasels," or "coyotes," or are ill-tempered, pugnacious or treacherous such as "rhinoceros," "African buffalo," "bull," or "baboon." Objects of this class are those which are primarily used for fighting, such as "guns," "spears," or "bombs," or in which the activity is primarily destructive, such as "blasting powder." Concepts which might not usually be considered destructive but which are described by the

subjects with adjectives connoting malevolence, fear, or danger, such as "weird," "awful," or "sinister" are included in this category.

The basic criterion for assigning a response to this category is whether or not the subject views the concept as likely to be destructive or not. In those cases in which a subject's attitude is not specified, the behavior that one would reasonably expect in a real situation should be used as a guide. Concepts which can harm other animals or humans, but which are generally gentle, unaggressive, or friendly should not be included in the "Possibly Destructive" category.

5. "Active Destruction" Responses.

This category covers concepts which include movement in which the action is explicitly destructive in nature. The standards for deciding whether movement is present or not are the usual ones for scoring M, FM, or m; the movement must be actually present, and it must be explicitly destructive. The response "a tiger watching something" would not be scored "Active Destruction" even though one might expect a tiger to be watching for the purpose of stalking prey, but the response "a tiger standing waiting to pounce" would be scored in this category. The description of the action alone, aside from the nature of the agent, must carry the aggressive implications. In the

case of inanimate or non-personified actions, the action must be occurring at the time, thus "something beating down through a pig's head" would be scored as "Active Destruction" while "something has beaten down through a pig's head" would not.

In addition to these general principles, certain arbitrary rules have been adopted to facilitate scoring:

(A) "The destructive aspects are dominant."

The most aggressive, destructive aspect of the response determines the classification. Thus a response, "a wolf -- no -- change it to a puppy" would be classified in the "Possibly Destructive" category because the wolf concept had been given, even though it was later rejected. Similarly, a response "two children playing patty-cake; they are friendly and happy. They have scars on their faces," would be classified in the "Victim of Destruction" category, despite the cheerful, friendly aspects of the response, because of the mention of scars on the faces.

Following this principle, in cases of reasonable doubt, the concept should be scored as destructive.

In cases where the subject talks about aggressive, destructive activities or objects, but does not immediately relate them to the response, these are to be scored as if they had been related to the blot. For example, the response "A friendly rat. Most rats are vicious, but this one is

friendly," would be scored as "Potential Destruction," while the response "It is not a blood mass. A blood mass would not be that color" is to be scored as "Victim of Destruction." The response "A black bear. I have killed and skinned a lot of them" would be classed as "Active Destruction."

(B) "No more than double scoring."

Any single response can be given scores in only two categories; if a response has elements of more than two categories, the two categories that have the largest designating numbers are the ones to be given the two scores. Thus the response "A tiger eating a stupid looking crippled rabbit" has elements of all four categories, but should be scored in the two most aggressive categories, "Potential Destruction" and "Active Destruction." In giving double scoring, each category must be warranted by the characteristics of the response considered independently from the other aspect which has been scored.

List of Examples

1. "Possibly Destructive" Category

Yes	No
Knight in armor	man
caveman	woman

"Possibly Destructive" (continued)

Yes	No
savage	soldier
boxers	sailor
gladiators	natives
cannibals	gargoyles
fiends	chimpanzee
fighter	monkey
ghost	cat
devil	dog
witch	cow
sorcerer	steer
boogie man	deer
gorilla	deer with antlers
ape	elephant
baboon	hippopotamus
wolf	buffalo
coyote	pig
fox	opossum
wild dog	racoon
tiger	camel
lion	squirrel
mountain lion	mouse
bob-cat	gopher
leopard	bear

"Possibly Destructive" (continued)

Yes	No
weasel	bat
mink	bird
rat	owl
shrew	toad
skunk	frog
wild animal	turtle
bull	snail
moose	fish
ram	sea horse
bear, grizzly	worm
boar	caterpillar
rhinoceros	crab
African buffalo	butterfly
crocodile	insect
lizard	bug
dinosaur	fly
dragon	jellyfish
snake	starfish
hawk	sea animal
eagle	scissors
horsefly	axe
polar bear	candle
shark	fire for cooking

"Possibly Destructive" (continued)

Yes	No
octopus	light
sting-ray	mask
spider	pliers
wasp	roach
flea	
mosquito	
billy goat	
gun	
bomb	
explosion	
fire	
spear	
knife	
sword	
tornado	
lightning	
storm cloud	
germ	
harpoon	

2. "Victim of Destruction" Category

Yes	No
running away	animal skin
hiding	burnt wood

"Victim of Destruction" (continued)

Yes	No
torn up	rusted steel
mangled	weathered stone
eaten away	broken statue
skinned	tail-less animal
scarred	sad person
given up the struggle	person crying
holding arms up to protect self	x-ray
animal struggling to get away	medical charts
animal trapped	grave stone
falling down	caricatures
turtle pulling head back in shell	fantastic creatures
animal smelling air for danger	an animal's head
bug with feelers out for danger	pair of arms
looking as if afraid	tree stump
carcass	
coffin	
dead animal	
decayed skin	
animal rotting away	
insect with frayed wings	
bug trapped in oil	

"Victim of Destruction" (continued)

Yes	No
butterfly with holes in his wings	
arm that has been cut off	
animals with heads gone	
animals with tails gone	
cripple	
dwarf	
hunchback	
deformed person	
heart	
lungs	
liver	
kidney	
any bones except wish-bone	
blood vessels	
blood	
menstrual blood	
brain	

3. "Active Destruction" Category

Yes	No
killing	eating
tearing apart	yelling
eating on animal	frowning
hitting	spitting
fighting	
struggling	
arguing	
screaming	
spitting on someone	
stalking	
prowling	
attacking	
tug-of-war	

VITA

Michael Levine was born in Philadelphia, Pennsylvania on February 3, 1944. He attended public schools in Philadelphia, and graduated with a Bachelor of Science degree from Central High School in June, 1962. The following September he entered Temple University, Philadelphia, Pennsylvania, and received a Bachelor of Arts degree with a major in psychology in 1966. In September, 1966, he enrolled in the Graduate School at Louisiana State University in the Department of Psychology. He held an assistantship in the Department of Psychology for the Spring Semester, 1967, and received a Veterans Administration stipend for psychology trainees for the academic years 1967-1968 and 1968-1969. From September 1, 1969, to August 31, 1970, he was a psychology intern at the University of Illinois Medical Center, Neuropsychiatric Institute, in Chicago, Illinois. He returned to Louisiana State University, was reappointed a VA trainee, and on October 7, 1971, accepted a position with the VA Hospital in New Orleans, La., as a psychology technician, where he is currently employed.

He received his Master of Arts degree in Psychology from Louisiana State University in 1972, and is a candidate for the Doctoral degree in Clinical Psychology during the 1973 Summer Commencement.

EXAMINATION AND THESIS REPORT

Candidate: MICHAEL LEVINE

Major Field: PSYCHOLOGY

Title of Thesis: MULTIVARIATE PREDICTION OF ASSAULTIVENESS IN A MALE INPATIENT PSYCHIATRIC POPULATION

Approved:

Joseph L. Dawson
Major Professor and Chairman

Max Goodrich
Dean of the Graduate School

EXAMINING COMMITTEE:

Don Hood, Ph.D.

Felicia A. Pryor

David C. Jones

K L Koonce

Date of Examination:

MAY 11, 1973